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Ref - 9

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A61K 9/127, 48/00, C12N 15/88	A1	(11) International Publication Number: WO 99/25320 (43) International Publication Date: 27 May 1999 (27.05.99)
(21) International Application Number: PCT/US98/24657 (22) International Filing Date: 19 November 1998 (19.11.98) (30) Priority Data: 60/066,188 19 November 1997 (19.11.97) US 60/083,175 27 April 1998 (27.04.98) US (71)(72) Applicants and Inventors: CHANG, Esther, H. [US/US]; 7508 Vale Street, Chevy Chase, MD 20815 (US). XU, Liang [CN/CN]; 1200 N. Queen Street #608, Arlington, VA 22209 (US). PIROLLO, Kathleen [US/US]; 2001 N. Adams Street #1031, Arlington, VA 22201 (US). (74) Agents: NEWLAND, Bart, G. et al.; Rothwell, Figg, Ernst & Kurz, Columbia Square, Suite 701 East, 555 13th Street N.W., Washington, DC 20004 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: TARGETED LIPOSOME GENE DELIVERY (57) Abstract <p>Targeted ligand-liposome-therapeutic molecule complexes (vectors) for the systemic delivery of the therapeutic molecule to various target cell types including cancer cells such as squamous cell carcinoma of the head and neck, breast and prostate tumors. The preferred ligands, folate and transferrin, target the liposome complex and facilitate transient gene transfection. The systemic delivery of complexes containing DNA encoding wild-type p53 to established mouse xenografts markedly sensitized the tumors to radiotherapy and chemotherapy. The combination of systemic p53 gene therapy and conventional radiotherapy or chemotherapy resulted in total tumor regression and long term inhibition of recurrence. This cell-specific delivery system was also used <i>in vivo</i> to successfully deliver, via intravenous administration, small DNA molecules (oligonucleotides) resulting in chemosensitivity and xenograft growth inhibition. Other therapeutic molecules, including intact viruses, can be encapsulated in a complex and targeted in accordance with the invention.</p>		